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What is claimed is:

Claim 1. An arc tube comprising:

an arc tube body including a light emitting tube portion forming a discharge space, a pinch seal portion disposed on sides of the light emitting tube portion, and a neck portion disposed between the light emitting tube portion and the pinch seal portion; and

a pair of electrodes pinch sealed with the arc tube body at the pinch seal portion such that a tip portion of each of the pair of electrodes protrudes towards the discharge space,

wherein each of a pair of opposing pinch seal surfaces of the pinch seal portion include a general portion and a step-down plane portion formed to have a substantially planar shape in step-down with respect to the general portion, and

wherein an axial distance from the neck portion to the step-down plane portion is 1 mm or less.

Claim 2. An arc tube comprising:

an arc tube body including a light emitting tube portion forming a discharge space, a pinch seal portion disposed on sides of the light emitting tube portion, and a neck portion disposed between the light emitting tube portion and

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the pinch seal portion; and

a pair of electrodes pinch sealed with the arc tube body at the pinch seal portion such that a tip portion of each of the pair of electrodes protrudes towards the discharge space,

wherein an axial distance measured in a direction going away from the light emitting tube portion from the neck portion to a tip of a substantially wedge-shaped slit formed between the arc tube body and at least one of the pair of electrodes is 0.5 mm or less.

Claim 3. The arc tube according to claim 1, wherein the arc tube body contains quartz glass and the pair of electrodes comprise a tungsten material.

Claim 4. The arc tube according to claim 2, wherein the arc tube body contains quartz glass and the pair of electrodes comprise a tungsten material.

Claim 5. A method of manufacturing an arc tube comprising:

pinch sealing a pair of electrodes with an arc tube body, wherein the pinch sealing process includes using a pair of pinchers having a step-up plane portion

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to form a step-down plane portion in a pinch seal portion of the arc tube body, and causing an edge on a light emitting tube portion side in the step-up plane portion of each of the pinchers to abut on the arc tube body such that an axial distance from a neck portion of the arc tube body to the step-down plane portion is 1 mm or less.

Claim 6. The method of manufacturing an arc tube according to claim 5, wherein the arc tube body is pinch sealed by the pair of pinchers until an axial distance measured in a direction going away from a light emitting tube portion of the arc tube body from the neck portion to a tip of a substantially wedge-shaped slit formed between the arc tube body and at least one of a pair of electrodes is 0.5 mm or less.

Claim 7. The method of manufacturing an arc tube according to claim 5, further including thermally shrinking the arc tube body at the pinch seal portion of the arc tube body prior to the pinch sealing.